The Increased Incidence of Tubal Factor Infertility and Ectopic Pregnancy after Chlamydia trachomatis Infection

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Objective
The objective of this poster is to determine if there is a difference in the number of women faced with an ectopic pregnancy or tubal factor infertility based on a prior Chlamydia infection. The research focuses on the presence of Chlamydia trachomatis DNA in the female reproductive system.

Materials and Methods
A study done in the UK and West Indies collected three samples (endometrial, ovarian core, fallopian tube) from three different groups of women: 50 controls, 24 ectopic pregnancy (EP) patients, and 14 patients with tubal factor infertility (TFI). All of the women ranged from 22 to 57 years of age when the samples were obtained. Each sample underwent both in-situ hybridization and PCR/Southern blotting to test for the presence of Chlamydia trachomatis DNA. The PCR confirmed presence using a 3' fluorescein-labeled oligonucleotide tag for the specific internal DNA region. In-situ hybridization was used in conjunction to improve the accuracy of the results. The C. trachomatis DNA was found using this method when the tissue slides showed a dark blue or purple color in the cells during light microscopy.

Results
In the control group of 50 patients, 16, or 32%, tested positive for C. trachomatis DNA using either one of the two methods (PCR or in-situ hybridization). This percentage is much smaller when compared to the TFI and EP groups. The TFI group tested 79% positive (11 out of 14 women) for C. trachomatis DNA using either method. PCR/Southern blotting found the DNA in 71% of the TFI patients, and in-situ hybridization found it in 43%. For the EP group, 19 out of 24 women tested overall positive for chlamydial DNA, which also equals 79%. PCR/Southern blotting caught the DNA in 67% and in-situ hybridization caught the DNA in 38% of the EP samples. Overall, levels of tubal factor infertility and ectopic pregnancy were much higher in women who had contracted Chlamydia at some point.

Conclusion
The studies done indicate that women who have had Chlamydia before are more likely to either have an ectopic pregnancy or be infertile due to scarring in the fallopian tubes. Chlamydia is known to be asymptomatic in most women, increasing the chance that the infection goes unnoticed and untreated. This leads to a buildup of scarring in the fallopian tubes that can prevent fertilization or prevent the fertilized egg from implanting in the uterus. Also, Chlamydia is often a precursor to pelvic inflammatory disease, which creates trouble regarding reproductive success. PID is another major cause of infertility due to its effect on the fallopian tubes and surrounding tissues. It is important that awareness about the STI is spread so that these women are tested more often. An increase in technology could improve testing, which could in turn lower rates of ectopic pregnancies, which can be life threatening to both the baby and the mother. If Chlamydia is detected more quickly, rates of tubal factor infertility could also decrease because the infection would have less time to damage the fallopian tubes.

Applications to Biotechnology
Several advances in the field of biotechnology made these results possible. PCR/Southern blotting and in-situ hybridization are examples of technologies that have greatly increased scientific understanding in a wide variety of areas. Their usage in this study allowed the C. trachomatis DNA to be found in the tissue samples. Biotechnology can be further used to create more efficient STI testing, which has implications for not just reducing the risk for infertility, but also reducing mortality rates associated with undetected STIs.

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References